PORSF 11.3.125.1v1 11/11/85

FEDERATED-FRY METALS, WEST
FEDERATED-FRY METALS
A Cookson Group Company

MATERIAL SAFETY DATA SHEET

A. GENERAL INFORMATION

TRADE NAME (COMMON NAME OR SYNONYM)	FEDERATED-FRY PRODUCT CODE #
90 Manganese Bronze #423 - SAE 430 A, Ca 862,	2

CHEMICAL NAME
Copper-Zinc-Manganese-Aluminum-Lead Alloy

FORMULA	MOLECULAR WEIGHT
Cu-Zn-Mn-Al-Pb	Not Applicable

ADDRESS (No. STREET, CITY, STATE AND ZIP CODE)
Federated-Fry Metals, Inc.
1901 Army Street
San Francisco, CA 94124

CONTACT	PHONE NUMBER	ISSUED DATE	REVISED DATE
Federated-Fry Metals, Inc. 1901 Army Street San Francisco, CA 94124	(415) 824-5252	11/11/85	11/11/85

B. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	C.A.S. #	WT %	PERMISSIBLE AIR CONCENTRATION
Copper	7440-50-8	60-68	0.1 mg/cu.m. - fume 1.0 mg/cu.m. - dust
Zinc	7440-66-6	15.1-32.5	5.0 mg/cu.m. - fume 15.0 mg/cu.m. - dust
Manganese	7439-96-5	2.5-5	5.0 mg/cu.m.-ceiling
Aluminum	7429-90-5	3-7.5	15.0 mg/cu.m.
Lead	7439-92-1	<0.2	0.05 mg/cu.m.
Tin	7440-31-5	<0.2	2.0 mg/cu.m.
			☐ OSHA ☐ ACGIH ☒ OTHER

C. FIRST AID MEASURES

Inhalation: Remove from exposure; place individual under care of physician. Symptomatic treatment such as bed rest and aspirin may afford some relief from chills and fever. Recovery is usually complete in 24 hours. If symptoms persist, consult a physician.

Ingestion: Induce vomiting in conscious individual and call a physician.

D. HAZARDS INFORMATION

HEALTH

INHALATION Metal fume fever with symptoms of fever, chills, metallic taste, chest tightness or nausea may result from the inhalation of copper or zinc fume. See Section K.

INGESTION Copper is moderately irritating to the lining of the stomach and intestines. Lead may cause lead intoxication with symptoms of nausea and abdominal pain. See Section K.

SKIN
Possible mechanical irritation of skin.

EYES
Mechanical irritation.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED Wilson's disease may be affected by copper exposure. Diseases of the liver, kidneys, nervous system, blood, blood forming organs and possibly reproductive system.

UNUSUAL CHRONIC TOXICITY
Depression of blood-forming activity, kidney disease and nervous system changes. Potential injury to developing fetus and possible effects on reproduction.

FIRE AND EXPLOSION

FLASH POINT °C	AUTO IGNITION TEMPERATURE °C	FLAMMABLE LIMITS IN AIR (% BY VOL.)
Not Applicable ☐ OPEN CUP ☐ CLOSE CUP	Not Applicable	Zinc dust--0.48 oz./cu.ft. Aluminum dust--0.035 oz./cu.ft.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Not Applicable

E. PRECAUTIONS/PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED

No specific agents recommended.

FIRE EXTINGUISHING AGENTS TO AVOID

No specific agents.

SPECIAL FIRE FIGHTING PRECAUTIONS
Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if involved in fire.

ENGINEERING CONTROLS
Local exhaust ventilation is required for melting, grinding, screening, soldering, or other operations where excessive exposures may occur.

NORMAL HANDLING Use of approved respirators is required for applications where adequate ventilation cannot be provided. When melted, the temperature should be kept as low as possible. Activities which generate dust or fume should be avoided.

STORAGE
AVOID storage near acetylene, chlorine or hydrogen peroxide.

SPILL OR LEAK A clean-up procedure that minimizes exposure is required. Vacuuming is preferred for dust. Place all material in closed containers. Do not use compressed air for cleaning. Use approved respiratory protection if possibility of dust/fume exposure exists.

SPECIAL: PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS Signs and labels in work areas and for contaminated containers or equipment may be required under OSHA regulations. Medical examinations, monitoring, recordkeeping and hygiene facilities and practices specified by OSHA may have to be met. Employee training program may also Label signal word: be required.

PERSONAL HYGIENE Practice good housekeeping and personal hygiene procedures. No tobacco or food in work area. Wash thoroughly before eating or smoking. Avoid ingestion or inhalation. Take a shower and change clothes at end of shift. Do not wear contaminated clothing home. Do not use compressed air for blowing dust off of clothes.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION

NIOSHA/MSHA approved respirator for toxic dust and/or fume.

EYES AND FACE

Safety glasses recommended for grinding or other operations generating flying particles.

HANDS, ARMS, AND BODY

Gloves recommended for grinding or other operations with significant skin contact.

OTHER CLOTHING AND EQUIPMENT Full protective clothing is required if the permissible exposure limit for lead is exceeded. Recommended for any operation with significant skin contact or exceeds the permissible exposure limit for other metals in alloy. All contaminated clothing should be removed before leaving plant premises.

G. PHYSICAL DATA

MATERIAL IS (AT NORMAL CONDITIONS):	APPEARANCE AND ODOR	
☐ LIQUID ☒ SOLID ☐ GAS ☐ _____	Yellow-red metal Various shapes and sizes	
BOILING POINT MELTING POINT 899-941 C	SPECIFIC GRAVITY (H_2O = 1) 7.85	VAPOR DENSITY (AIR = 1) Not Applicable
SOLUBILITY IN WATER (% by Weight) Insoluble	pH Not Applicable	VAPOR PRESSURE (mm Hg at 20° C) ☐ (PSIG) ☐ Not Applicable
EVAPORATION RATE (Butyl Acetate = 1) ☐ (Either = 1) ☐ Not Applicable	% VOLATILES BY VOLUME (At 20° C) Not Applicable	

H. REACTIVITY DATA

STABILITY	CONDITIONS TO AVOID
☐ UNSTABLE ☒ STABLE	Not Applicable

INCOMPATIBILITY (MATERIALS TO AVOID)

Contact with acetylene may form unstable acetylides.
Burns spontaneously in gaseous chlorine.
Hydrogen peroxide decomposes violently on contact.

HAZARDOUS DECOMPOSITION PRODUCTS

At temperatures above the melting point, metal oxide fumes may be evolved.

HAZARDOUS POLYMERIZATION	CONDITIONS TO AVOID
☐ MAY OCCUR ☒ WILL NOT OCCUR	Not Applicable

I. ENVIRONMENTAL

EPA HAZARDOUS SUBSTANCE? ☐ YES ☒ NO IF SO, REPORTABLE QUANTITY_____ #

40 CFR 116-117

WASTE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE, AND LOCAL DISPOSAL OR DISCHARGE LAWS)
If hazardous under 40 CFR 261, Subparts B and C, material must be treated or disposed in a facility meeting the requirements of 40 CFR 264 and 265. If non-hazardous, material should be disposed in a facility meeting the requirements of 40 CFR 257. This material may have value on a recycled basis.

RCRA STATUS OF UNUSED MATERIAL:
If discarded in unaltered form, material should be considered a hazardous waste due to listing in 40 CFR 261.11(3), Appendix VIII. Under specific circumstances, application can be made to the EPA Administrator to have a particular waste designated non-hazardous.

40 CFR 261-11

J. REFERENCES

PERMISSIBLE CONCENTRATION REFERENCES

OSHA Regulations 29 CFR 1910.1000 and 1910.94(a).
ACGIH "Threshold Limit Values for Chemical Substances..." (1981).

HAZARD INFORMATION REFERENCES "Documentation of the Threshold Limit Values," 4th Ed., ACGIH
Patty's Industrial Hygiene and Toxicology, Vol. 2A, 3rd Rev. Ed., 1981.
NFPA "Fire Protection Guide on Hazardous Materials," 6th Ed., 1975
"Registry of Toxic Effects of Chemical Substances," NIOSH, 1980.
"Handbook of Toxic and Hazardous Chemicals"; Sittig, Marshall; Noyes Publications, 1981.

GENERAL

"Handbook of Chemistry and Physics, 57th Ed.," 1976-77, Weast, R.C., Editor, CRC Inc.
"Standards Handbook, Part 7--Data/Specifications," 1970, Copper Development Assoc., Inc.

K. ADDITIONAL INFORMATION

Information (hazards, precautions, first aid, etc.) is abbreviated. More detailed information is contained in references found in Section J.

Hazard Information--Inhalation: Stannosis, a benign pnuemonoconiosis, may result from chronic tin exposure. Pulmonary function is not affected. Lead intoxication may result from chronic high lead exposure with symptoms of anemia, insomnia, weakness, constipation, and gastrointestinal disorders.
Manganese exposure may cause pneumonitis.

Hazard Information--Ingestion: Tin and zinc are relatively non-toxic by mouth but may irritate lining of stomach and intestines and may cause symptoms of fever, nausea, stomach cramps or diarrhea in large doses.

Hazard Information--Unusual Chronic Toxicity: Manganese may affect the central nervous system with neurological disturbances and symptoms of anorexia, fatigue, memory loss, weakness or nervousness.

Biological Limit for Lead: 50 ug/100g